HUMAN FACTOR PROBLEM AREAS

Question #32: In relation to the House/Senate Conference language, what are today's ATC/AF human factors problems that need to be addressed? What about human factors research for tomorrow's technologies?

Answer: We understand human factors risks through our experience in resolving problems in today's capabilities such as from STARS and AMASS. This includes problems in CHI design and concerns about human error, situation awareness, and workload. Acquisition programs have the responsibility to apply human factors information to the system design and address any human factors issues that arise through the timely application of appropriate human factors methods and techniques during product development. The human factors discipline is responsible for ensuring that information necessary to support the introduction of enhanced capabilities in the evolving NAS is available for acquisition programs in a timely manner such that it supports the system design and development process. In order to ensure information (e.g., human factors guidelines and standards) is available to support the agency's acquisition programs, human factors research must be conducted early enough to make certain that the system design properly leverages inherent strengths and limitations of the human operator. This human-centered approach to the design of ATC and AF systems reduces risks to program cost, schedule, performance (i.e., usability), and user acceptance.

Human factors research for tomorrow's technologies needs to examine how changes in roles and responsibilities associated with new operational concepts and the NAS architecture will impact the human operator. Technology implementation without consideration of the human performance envelope poses risk that the intended level of system performance will not be reached. In fact, without an understanding of the requisite technology performance necessary to support human performance, the implementations of technology-based solutions to today's problems will provide fewer benefits than projected, and potentially impose greater cost than the benefits warrant.   Issues in NAS evolution are related to:

*   Human factors implications of NAS and system level integrations of new air and ground capabilities, and their inter-operability from different levels of implementations in the flight deck and ATC automation.
*   Changes in roles and responsibilities, including distributed and collaborative decision making, along with the integration of procedures and training to mitigate the introduction of new sources of error.
*   Effective use of teams and communications.

Human factors research provides the central focus for ensuring that operator task allocations, workload, and situation awareness are addressed through the systematic assessment of human performance considerations including the control/display of information, information exchange/communication, and error mitigation/management. Without a systematic addressal of the human factors issues associated with near term enhanced capabilities through the conduct of human factors research, the information necessary to support their successful acquisition and implementation will not be available.